

Additional Mathematics Courses

The “college and career ready” line has been based on evidence from a number of sources, including international benchmarking, surveys of postsecondary faculty and employers, review of state standards, and expert opinion. Students meeting these standards should be well-prepared for introductory mathematics courses in 2- and 4- year colleges. Still, there are persuasive reasons for students to continue on to take a fourth mathematics course in high school.

Research consistently finds that taking mathematics above the Algebra II level highly corresponds to many measures of student success. In his groundbreaking report *Answers in the Toolbox*, Clifford Adelman found that the strongest predictor of postsecondary success is the highest level of mathematics completed (Executive Summary). ACT has found that taking more mathematics courses correlates with greater success on their college entrance examination. Of students taking (Algebra I, Geometry and Algebra II and no other mathematics courses), only thirteen percent of those students met the benchmark for readiness for college algebra. One additional mathematics course greatly increased the likelihood that a student would reach that benchmark, and three-fourths of students taking Calculus met the benchmark (ACTb 13).

Students going through the pathways should be encouraged to select from a range of high quality mathematics options. STEM-intending students should be strongly encouraged to take Precalculus and Calculus (and perhaps a computer science course). A student interested in psychology may benefit greatly from a course in discrete mathematics, followed by AP Statistics. A student interested in starting a business after high school could use knowledge and skills gleaned from a course on mathematical decision-making. Mathematically-inclined students can, at this level, double up on courses—a student taking college calculus and college statistics would be well-prepared for almost any postsecondary career.

Taken together, there is compelling rationale for urging students to continue their mathematical education throughout high school, allowing students several rich options once they have demonstrated mastery of core content. The Pathways describe possible courses for the first three years of high school. Other arrangements of the Common Core State Standards for high school are possible. Standards marked with a (+) may appear either in courses required for all students, or in later courses. In particular, the (+) standards can form the starting point for fourth year courses in Precalculus and in Probability and Statistics. Other fourth year courses, for example Calculus, Modeling, or Discrete Mathematics are possible.